

11/03/00

11-06-00

A/RCS

PTO
09/705379

11/03/00

Please type a plus sign (+) inside this box ☐

Approved for use through 12/30/2000 OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

REISSUE PATENT APPLICATION TRANSMITTAL

Address to: Assistant Commissioner for Patents Box Reissue Washington, DC 20231	Attorney Docket No.	P 0555.10023
	First Named Inventor	Swartwood, Troy
	Original Patent Number	5,979,522
	Original Patent Issue Date (Month/Day/Year)	11-9-99
	Express Mail Label No.	EL590464269US

APPLICATION FOR REISSUE OF: ☒ **Utility Patent** ☐ **Design Patent** ☐ **Plant Patent**
(Check applicable box)

APPLICATION ELEMENTS (37 CFR 1.173)	ACCOMPANYING APPLICATION PARTS
1. <input checked="" type="checkbox"/> Fee Transmittal Form (PTO/ SB/ 56) (Submit an original, and a duplicate for fee processing)	7. <input type="checkbox"/> Statement of status/support for all changes to the claims. See 37 CFR 1.173 (c).
2. <input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.	8. <input checked="" type="checkbox"/> Original U.S. Patent for surrender <input checked="" type="checkbox"/> Ribbonded Original Patent Grant <input type="checkbox"/> Statement of Loss (PTO/SB/55)
3. <input checked="" type="checkbox"/> Specification and Claims in double column copy of patent format (amended, if appropriate)	9. <input type="checkbox"/> Foreign Priority Claim (35 U.S.C. 119) (if applicable)
4. <input checked="" type="checkbox"/> Drawing(s) (proposed amendments, if appropriate)	10. <input checked="" type="checkbox"/> Information Disclosure Statement (IDS)/PTO-1449 <input checked="" type="checkbox"/> Copies of IDS Citations
5. <input checked="" type="checkbox"/> Reissue Oath/Declaration (original or copy) (37 C.F.R. § 1.175) (PTO/SB/51 or 52)	11. <input type="checkbox"/> English Translation of Reissue Oath/Declaration (if applicable)
6. Original U.S. Patent currently assigned? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (If Yes, check applicable box(es)) <input type="checkbox"/> Written Consent of all Assignees (PTO/SB/53) <input checked="" type="checkbox"/> 37 C.F.R. § 3.73(b) Statement <input checked="" type="checkbox"/> Power of Attorney (PTO/SB/96)	12. <input type="checkbox"/> Preliminary Amendment 13. <input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503) (Should be specifically itemized) 14. Other:

15. CORRESPONDENCE ADDRESS

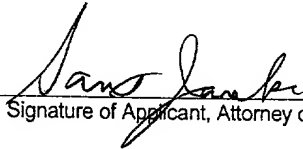
☐ Customer Number or Bar Code Label or ☐ Correspondence address below
(Insert Customer No. or Attach bar code label here)

Name	Garth Janke				
	Birdwell, Janke & Durando, PLC				
Address	1925 Standard Insurance Center				
	900 SW Fifth Avenue				
City	Portland	State	Oregon	Zip Code	97204
Country	USA	Telephone	503-228-1841	Fax	503-228-2635

NAME (Print/Type)	Garth Janke	Registration No. (Attorney/Agent)	40,662
Signature	<i>Garth Janke</i>	Date	November 3, 2000

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Reissue, Washington, DC 20231.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

REISSUE APPLICATION FEE TRANSMITTAL FORM						Docket Number (Optional) P 0555.10023		
Claims as Filed - Part 1								
Claims in Patent		Number Filed in Reissue Application	(3) Number Extra	Small Entity		Other than a Small Entity		
				Rate	Fee	Rate	Fee	
(A) 17	Total Claims (37 CFR 1.16(j))	(B) 5	**** =	x \$ 0 =	0	or	x \$ =	
(C) 3	Independent claims (37 CFR 1.16(i))	(D) 1	* =	x \$ 0 =	0		x \$ =	
Basic Fee (37 CFR 1.16(h))					\$		\$ 355.00	
Total Filing Fee					\$	OR	\$ 355.00	
Claims as Amended - Part 2								
	(1) Claims Remaining After Amendment		(2) Highest Number Previously Paid For	(3) Extra Claims Present	Small Entity		Other than a Small Entity	
					Rate	Fee	Rate	Fee
Total Claims (37 CFR 1.16(j))	***	MINUS	**	* =	x \$ =		x \$ =	
Independent Claims (37 CFR 1.16(i))	***	MINUS	*****	=	x \$ =		x \$ =	
Total Additional Fee					\$	OR	\$	
<p>* If the entry in (D) is less than the entry in (C), Write "0" in column 3.</p> <p>** If the "Highest Number of Total Claims Previously Paid For" is less than 20, Write "20" in this space.</p> <p>*** After any cancellation of claims.</p> <p>**** If "A" is greater than 20, use (B - A); if "A" is 20 or less, use (B - 20).</p> <p>***** "Highest Number of Independent Claims Previously Paid For" or Number of Independent Claims in Patent (C).</p> <p><input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.</p> <p><input type="checkbox"/> Please charge Deposit Account No. _____ in the amount of _____. A duplicate copy of this sheet is enclosed.</p> <p><input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees under 37 CFR 1.16 or 1.17 which may be required, or credit any overpayment to Deposit Account No. 02-2451. A duplicate copy of this sheet is enclosed.</p> <p><input checked="" type="checkbox"/> A check in the amount of \$ 355.00 to cover the filing / additional fee is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p>								
<p>WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</p>								
<p><u>11-3-00</u> Date</p>				<p style="text-align: center;"> Signature of Applicant, Attorney or Agent of Record</p> <p style="text-align: center;">Garth Janke, Reg. No. 40,662 Typed or printed name</p>				

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(f) AND 1.27 (c)) - SMALL BUSINESS CONCERN**

Docket No.
P 0555.10023

Serial No.

Filing Date
(Concurrently Herewith)

Patent No.

Issue Date

Applicant/ Patentee: **Troy M. Swartwood, Douglas O. Keller and Loren R. Schuh**

Invention: **KNIFE HOLDER FOR A CHIPPER DISC** (Reissue of 5,979,522, filed November 9, 1999)

I hereby declare that I am:

- ☒ the owner of the small business concern identified below:
☐ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF CONCERN: **Key Knife, Inc.**ADDRESS OF CONCERN: **19100 SW 125th Court, Tualatin, Oregon 97062**

I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 37 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the above identified invention described in:

- ☒ the specification filed herewith with title as listed above.
☐ the application identified above.
☐ the patent identified above.

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed on the next page and no rights to the invention are held by any person, other than the inventor, who could not qualify as an independent inventor under 37 CFR 1.9(c) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ no such person, concern or organization exists.
☐ each such person, concern or organization is listed below.

FULL NAME _____
 ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

FULL NAME _____
 ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

FULL NAME _____
 ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

FULL NAME _____
 ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING: Robert Bayly

TITLE OF PERSON SIGNING _____

OTHER THAN OWNER: President

ADDRESS OF PERSON SIGNING: Key Knife, Inc.

19100 SW 125th Court

Tualatin, Oregon 97062

SIGNATURE:  DATE: November 2, 2000

KNIFE HOLDER FOR A CHIPPER DISC

BACKGROUND OF THE INVENTION

The present invention relates to an improved knife holder for a chipper disc or like apparatus for producing chips or flakes from a piece of wood.

It is common to form chips for producing wood pulp for use in the manufacture of paper products, employing apparatus known as chippers or choppers, and to produce flakes or wafers for use in the manufacture of waferboard or oriented strand board, employing similar apparatus known as waferizers and stranders. All of these apparatus employ a disc rotating in the vertical plane and having one or more knives attached to knife holders disposed so that cutting edges thereof extend beyond the face of the disc. A piece of wood is fed against the face of the disc and the knives, so that cuts are made in the wood, producing the chips or flakes. The knives experience very large forces and must be held firmly in place.

However, the knives must be removable from the knife holder, for reversing or replacing them. It has been a problem to ensure firm attachment of the knives while providing for their easy removal from the knife holders.

As a response, Holmberg et al., U.S. Pat. No. 4,694,995, proposes a knife holder that includes a filler piece fitting into a recess in the chipper disc, and a cassette for holding the knife. The cassette has a top and bottom part that clamps the knife therebetween and a fastener is inserted through the top and bottom parts that extends into the filler piece, but not into the chipper disc. The filler piece is separately fastened to the chipper disc. Though it is not explained in the patent, the filler piece is a relatively large and heavy component, while the top part is relatively small and light. It is proposed that the knife may be removed simply by removing the fastener for the cassette and by lifting the small, light top part, while the larger, heavier filler piece remains fixed to the chipper disc. It is also proposed that the fastener for the cassette may be loosened to remove the knife.

Whether the fastener for the cassette of Holmberg is removed entirely or merely loosened, the top part of the cassette and the knife become loose and at least the top part must be moved to get at the knife. As the knife is heavy and difficult to handle and it is desirable to be able to use two hands for this purpose, the aforementioned requirement imposed by Holmberg is objectionable. Moreover, to the extent that the fastener for the cassette of Holmberg is smaller and lighter, it is capable of exerting less force on the knife than prior art fasteners for knife holders so that the knife is not held as firmly.

Accordingly, there is a need for an improved knife holder for a chipper disc or the like that provides for easier removal of a knife held thereby while providing for more firmly holding the knife during operation of the apparatus.

SUMMARY OF THE INVENTION

An improved knife holder for a chipper disc or the like according to the present invention solves the aforementioned problems and meets the aforementioned needs by providing a knife holder for holding a knife having a top and bottom side. The knife holder has a first clamping portion and a second clamping portion for clamping the knife therebetween. One of the clamping portions pivots about a pivot point for clamping the knife, and for releasing the knife, so that it may be easily removed from the knife holder. In the relative position of the first and second clamping portions in

which the knife is clamped and in their relative positions in which a space is opened up around the knife permitting its removal, the first and second clamping portions are rigidly disposed with respect to one another.

Preferably, the pivoting clamping portion is employed as a lever with the pivot point functioning as a fulcrum for the lever. An applied force applied to the lever is multiplied at the knife to ensure that the knife is firmly held in place with a minimum amount of the applied force.

Therefore, it is a principal object of the present invention to provide a novel and improved knife holder for a chipper disc or the like and method.

It is another object of the present invention to provide such a knife holder and method that provides for increased ease of removing the knife from the knife holder.

It is yet another object of the present invention to provide such a knife holder and method that provides for removing the knife without removing other parts of the knife holder.

It is still another object of the present invention to provide such a knife holder and method that provides for holding the knife with increased firmness and with decreased applied force.

The foregoing and other objects, features and advantages of the present invention will be more readily understood upon consideration of the following detailed description of the invention, taken in conjunction with the following drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a pictorial, exploded view of the knife holder of FIG. 1.

FIG. 2 is a cross-sectional view of a knife holder for a chipper disc or the like according to the present invention, in a position showing a knife being clamped.

FIG. 3 is a cross-sectional view of the knife holder of FIG. 1, in a position showing the knife being released.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

A knife holder according to the present invention is particularly adapted for attachment to chipper or waferizer discs and drums for cutting wood chips or flakes from pieces of wood, such as whole logs, lumber and waste wood. The application, however, is not essential to the invention.

Referring to FIG. 1, a preferred, disc embodiment of the invention is shown. The knife holder 10 is adapted to receive an existing, removable knife 12 which may have a number of different shapes. For receiving the knife 12, the knife holder includes a top clamping portion 14 and a bottom clamping portion 16. Each of the clamping portions is shaped to fit the knife. Particularly, the top clamping portion is shaped to fit a top surface 18 of the knife and the bottom clamping portion is shaped to fit a bottom surface 20 of the knife.

The top clamping portion 14 is rigidly attached to a base 50 by bolts 40. The top clamping portion is seated on a ledge 26 so as to space the top clamping portion above the base. The bottom clamping portion 16 is disposed in the space provided between the top clamping portion and the base.

Turning to FIGS. 2 and 3, the knife holder 10 is shown in two states of operation, corresponding to two relative positions of the top and bottom clamping portions. In FIG. 2, in a clamping position of the clamping portions, the clamping portions clamp the knife. In FIG. 3, in an open position of

the clamping portions, the knife is exposed for removal or cleaning. To provide for both states of operation, the bottom clamping portion 16 is adapted to pivot about a pivot point 22 on the base 50, and to clamp the knife against the top clamping portion by this action. It should be understood throughout that the roles of the top and bottom clamping portions may be reversed without departing from the principles of the invention.

Pivoting of the bottom clamping portion 16 is driven by a clamping mechanism 24. The clamping mechanism is coupled to the top clamping portion 14 so that the clamping mechanism can translate with respect thereto. The clamping mechanism is connected to the bottom clamping portion with a suitable joint for maintaining the connection during translation of the clamping mechanism.

As illustrated in FIGS. 2 and 3, the pivot point 22 is preferably part of a rounded surface 23 of the base 50, and the bottom clamping portion 16 preferably includes a complementary rounded surface 25. Also as illustrated, preferably, the rounded surface 23 is circular and convex and the rounded surface 25 is circular and concave; however, one of ordinary skill in the art will readily appreciate that other curved surfaces could be employed as well as that the surfaces which are selected to be concave and convex could be reversed. As can be seen by comparing FIGS. 2 and 3, the surface 25 is disposed so as to make movable contact with the base 50, preferably, sliding on the surface 23 in response to movement of the clamping mechanism 24.

Preferably, the clamping mechanism 24 is threadingly received in a hole through the top clamping portion 14. An end 28 of the clamping mechanism extends beyond the top clamping portion toward the bottom clamping portion 16. The end 28 has a neck portion 30 that is received in a groove 32 (best seen in FIG. 1) in the bottom clamping portion to form the aforementioned joint. Alternative constructions and configurations of the clamping mechanism and its coupling with the bottom clamping portion will be apparent to those of ordinary skill in the art.

Force applied by the clamping mechanism for pivoting the bottom clamping portion is provided through the end 28. Threading the clamping mechanism so as to move it upwardly or downwardly in the top clamping portion 14 pulls or pushes a driving end 34 of the bottom clamping portion 16 in the same direction.

The bottom surface 20 of the knife 12 is received by a driven end 38 of the bottom clamping portion. In turn, the driven end moves in response to movement of the driving end 34, preferably in the opposite direction as a result of pivoting of the bottom clamping portion 16 about the pivot point 22. The top clamping portion 14 and the bottom clamping portion 16 clamp the knife therebetween in the clamping position of the clamping portions that provides a minimum spacing equal to the thickness dimension of the knife, as shown in FIG. 2. In the clamping position of the clamping portions, the clamping mechanism is threaded into the top clamping portion and is disposed toward the base 50 a maximum amount.

As the clamping mechanism 24 is threaded out of the top clamping portion 14, the clamping mechanism pulls the driving end 34 of the bottom clamping portion 16 away from the base. At a maximum amount of travel of the driving end 34, a maximum space 48 is created around the knife to permit access thereto for removal or cleaning.

Pinch-off surfaces 52 are provided on the top and bottom clamping portions that are adapted to meet one another when the top and bottom clamping portions are spaced the maximum relative amount. The meeting of the surfaces 52 serves two functions. First, in conjunction with the connection of the driving end 34 to the clamping mechanism 24, this

immobilizes the bottom clamping portion with respect to the top clamping portion, wedging the second clamping portion between the top clamping portion and the base, i.e., between the pinch-off surfaces and the pivot point 22. This provides the outstanding advantage of allowing the knife to be removed without the need to hold or handle any of the other parts of the knife holder at the same time. A spring-biased plunger mechanism 51 is preferably also provided to ride the bottom clamping portion 16 during its travel and thereby control movement of the bottom clamping portion between the open and clamping relative positions.

A second function of the pinch-off surfaces 52 is that open space 46 that exists behind the knife is cut off from the space 48 for accessing the knife, so that objects within the space 48, such as portions of the upper and lower clamping portions and the knife, can be cleaned without introducing debris into the open space 46, which is generally difficult to clean. For example, the space 48 can be blown with compressed air without forcing debris into the open space 46. The pinch-off surfaces, however, need not provide for both of the aforementioned functions.

Preferably, the bottom clamping portion 16 is configured as a lever for multiplying the force that is applied by the clamping mechanism 24 at the knife, to ensure that the knife 12 is firmly held with a minimum of force. In the geometry of FIG. 1, leverage is achieved by spacing the end 28 a greater distance from the pivot point 22 than is the knife 12.

It is to be recognized that, while a specific knife holder for a chipper disc has been shown and described as preferred, other configurations could be utilized, in addition to configurations already mentioned, without departing from the principles of the invention. For example, while the pivot point 22 and the top clamping portion 14 are sufficiently rigidly disposed with respect to one another to enable the knife 12 to be firmly clamped firmly between the top and bottom clamping portions, this does not preclude some compliance between the pivot point and top clamping portion. Similarly, though the pinch-off surfaces 52 may provide for maintaining the top and bottom clamping portions in substantially fixed relationship to one another in the open position of the clamping members, the pinch-off surfaces may also be suitably compliant. Moreover, though it is preferable to provide that the driven end counterbalances the driving end about the pivot point 22, this is not essential for practice of the invention.

The terms and expressions which have been employed in the foregoing specification are used therein as terms of description and not of limitation, and there is no intention of the use of such terms and expressions of excluding equivalents of the features shown and described or portions thereof, it being recognized that the scope of the invention is defined and limited only by the claims which follow.

We claim:

1. A knife holder for holding a knife having a first side and a second side, the knife holder comprising:

- a first clamping portion adapted to receive the first side of the knife;
- a second clamping portion adapted to receive the second side of the knife, said second clamping portion and said first clamping portion being adapted to clamp the knife therebetween in a first relative position of said clamping portions; and
- a clamping mechanism coupled to one of said first clamping portion and said second clamping portion and adapted for moving said one of said clamping portions so that said clamping portions obtain a second relative position wherein said clamping portions are spaced farther apart than in said first relative position for removing the knife from between said clamping